REMARKS

This amendment is being filed along with a Request for Continued Examination (RCE) application in response to a final Office Action having a mailing date of October 6, 2005. Claims 1-3, 5-11, 13-16, 18, and 20-21 are amended as shown. No new matter has been added. With this amendment, claims 1-16 and 18-21 are pending in the application.

I.   Preliminary Matters

In the Office Action Summary page, it was indicated that claims 1-21 are pending in the application and that claim 17 is withdrawn from consideration. The applicants would like to clarify that claim 17 was canceled in the prior amendment filed on August 19, 2005. Accordingly, the presently pending claims are claims 1-16 and 18-21.

II.   Objections to the Drawings

In the final Office Action, the Examiner first objected to the drawings (Figs. 2-4) for including reference characters "A" and "B" that the Examiner believed were not mentioned in the description. The applicants respectfully disagree with this objection. As explained in the REMARKS section in the prior amendment filed on August 19, 2005, the reference characters "A" and "B" serve as a reference guide to provide an indication of where the flowcharts of Figs. 2-4 are connected to one another. To provide clarification, the applicants amended the specification in the amendment of August 19, 2005 that provided explicit reference to the reference characters "A" and "B" in Figs. 2-4. Accordingly, it is believed that the Examiner's objection was already properly addressed in the prior amendment of August 19, 2005, and therefore should be withdrawn.

In the final Office Action, the Examiner next objected to the drawings for allegedly failing to show the features recited in claims 18-21. Again, the applicants respectfully disagree with this objection.

Claims 18-21 contain various recitations directed towards performing soft-programming based at least in part on current draw. As explained on page 8, line 20 through page 9, line 2 of the present application, the particular multiplicity of memory cells that are to be

soft-programmed is based on the presence/number of depleted memory cells and the associated current draw.

Figs. 2-4 show blocks 110-120, 230-240, 280-290, 400-410 that pertain to detecting the presence of depleted memory cells (and hence the associated current draw is determined), while blocks 130 and 200 pertain to the multiplicity soft-programming operations that are based on the depleted memory cells and associated current draw. Therefore, because Figs. 2-4 do in fact reflect the features recited in claims 18-21, the applicants respectfully request that the Examiner withdraw the objections to the drawings.

III.   Rejection Under 35 U.S.C. § 112, First Paragraph

In the final Office Action, the Examiner rejected claims 18-21 under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the enablement requirement. Specifically, the Examiner stated that the "method for soft-programming an electrically erasable memory device as recited in claims 18-21 are not described in the specification." Again, the applicants respectfully disagree with this rejection.

Figs. 2-4 and the accompanying description describe embodiment(s) of methods for soft-programming that are consistent with the recitations of claims 18-21. Moreover, the recitations of claims 18-21 are consistent with the description on page 8, line 20 through page 9, line 2 of the present application.

The applicants further note that "soft-programming" in and of itself is not described in great detail in the present application because it is well known and a person skilled in the art having the benefit of the applicants' disclosure would understand how to perform soft-programming. Indeed, the references cited by the Examiner provide various examples of soft-programming that is known by those skilled in the art. The subject matter of claims 18-21 and the other embodiments disclosed by the present applicants (and which meet the requirements of 35 U.S.C. § 112, first paragraph) pertain to the technique(s) in which soft-programming is applied, which is distinctive over the prior art. Accordingly, the applicants respectfully request the Examiner to withdraw the rejections under 35 U.S.C. § 112, first paragraph.

IV.   Discussion of the Applicants' Disclosed Embodiments in View of the Cited Reference

In the final Office Action, claims 1-16 amd 18-21 are rejected under 35 U.S.C. § 102(b) as being anticipated by Roohparvar (U.S. Patent No. 6,587,903). For the reasons set forth below, the applicants respectfully request the Examiner to reconsider and to allow the pending claims.

A disclosed embodiment will now be discussed in comparison to the applied references. Of course, the discussion of the disclosed embodiment, and the discussion of the differences between the disclosed embodiment and subject matter described in the applied references, do not define the scope or interpretation of any of the claims. Instead, such discussed differences are intended to merely help the Examiner appreciate important claim distinctions discussed thereafter.

As explained in the present application on page 8, lines 14-19, one embodiment of the present invention is based on the idea that soft-programming and verifying of memory cells in a memory device can be a multiplicity (for example, twice, such as 32 bits) of the number that are capable of being programmed (such as 16 bits) using the circuits and their current capability that are present on the memory device. Indeed, it may well be possible to soft-program and verify memory cells with a different multiplicity, such as three or four times or more times the number of cells that may be programmed during a programming operation, or with a same multiplicity that may be programmed during a programming operation (e.g., 16 bits programmed and 16 bits simultaneously soft-programmed).

The present inventors have recognized that the number of cells that need soft-programming may be a very small percentage, and substantially less than all of the memory cells on the memory device. The circuit currently present on the memory device can program simultaneously a plurality of memory cells, in the example given, 16 bits. During soft-programming, the goal is correct only those memory cells that are not at the correct erased state. Since, the inventors have recognized that the number of memory cells not at the correct erased stated will be only a small fraction of the total memory cells, a larger number than those cells that can be programmed simultaneously with the current carrying capability of the circuit can be

soft-programmed simultaneously. Thus, as an example, if 16 memory cells are programmed, it is possible to soft-program simultaneously 16, 32, or 48, etc. pluralities of cells. The pluralities of 15, 32, or 48, etc. cells that are simultaneously soft-programmed in this example are the "multiplicities" or multiples of the 16 cells that were programmed during the programming operation(s).

The "multiplicities" disclosed by the present applicants are thus referring to "multiplicities" of "memory cells." Embodiments pertaining to soft-programming simultaneously a plurality of memory cells according to various multiplicities are disclosed in Figures 1-3 of the present application, such as the registers SPX32 and SPX16 where the "multiplicity" is currently stored, and the blocks 100, 270, 320, 250, 420, etc. that describe and pertain to soft-programming simultaneously a plurality of memory cells according to a multiplicity. Indeed, an advantage of performing simultaneous soft-programming on a multiplicity of memory cells is to exploit parallelism, so that multiple memory cells can be soft-programmed quickly and efficiently. In contrast, the known prior art (including Roohparvar) performs soft-programming sequentially, one memory cell at a time.

Specifically in the final Office Action, the Examiner was of the view that Roohparvar taught "performing a first soft-programming states 244, 248, and 240 multiplicity in a maximum number of times" (emphasis ours), and made reference to column 5, lines 47-48 of Roohparvar. Furthermore, the Examiner stated that Roohparvar disclosed "performing a second soft programming multiplicity about 10 or 32 times" (emphasis ours), and made reference to column 6, line 52 of Roohparvar.

The applicants respectfully submit that Roohparvar does not disclose, teach, or suggest performing soft-programming simultaneously on a plurality of memory cells. The passages of Roohparvar cited above refer to "multiplicity" in terms of "a number of times" in which a particular individual memory cell is to be soft-programmed. For example, the description of soft-programming "a maximum number of times" and/or soft-programming "10 or 32 times" is clearly referring to the number of times that each memory cell is soft-programmed. See, e.g., column 6, lines 50-53 of Roohparvar.

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Furthermore, at the top of column 6, Roohparvar describes the soft-programming being carried out if the verify step fails. In his description, he describes a <u>single</u> <u>memory cell</u> being soft-programmed. He states, in column 6, line 2, that the soft-programming is carried out by biasing "the selected memory cell." Repeatedly through column 6, he refers to "the selected memory cell" and performs testing to determine whether or not the soft-programming has correctly soft-programmed the selected memory cell. In other words, Roohparvar is clearly soft-programming <u>one memory cell at a time</u>. He further states in column 6, lines 19-23, that indeed, each memory cell coupled to a bit line is soft-programmed a maximum of one time. There is no description or suggestion in Roohparvar of the number of memory cells that may be soft-programmed simultaneously in one step being different than the number of memory cells which are simultaneously soft-programmed in a different step.

V.   <u>Discussion of the Claims</u>

Independent claim 1 has been amended to recite --the first soft-programming multiplicity corresponding to <u>simultaneous</u> soft programming of a first <u>plurality</u> of <u>memory cells</u> of the memory device-- and --the second soft-programming multiplicity corresponding to <u>simultaneous</u> soft programming of a second <u>plurality</u> of <u>memory cells</u> of the memory device--. As explained above, these features are not disclosed, taught, or suggested by Roohparvar. Roohparvar does not simultaneously soft-program a plurality of memory cells--instead, Roohparvar soft-programs one memory cell at a time. Furthermore, Roohparvar's "multiplicity" does not correspond to simultaneous soft-programming of a plurality of memory cells. Instead, Roohparvar soft-programs an <u>individual</u> memory cell multiple times. Accordingly, claim 1 is allowable over Roohparvar.

Independent claim 9 is amended to recite --first and second pluralities of memory cells--. Claim 9 is further amended to recite "means for operating with a first soft-programming multiplicity simultaneously on the first plurality of memory cells" and for "operating with a second soft-programming multiplicity, simultaneously on the second plurality of memory cells." As explained above, these features are not disclosed, taught, or suggested by Roohparvar, since

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Roohparvar performs soft-programming on a memory cell one at a time. Accordingly, claim 9 is allowable over Roohparvar.

Independent claim 18 recites "performing a first soft-programming of a first plurality of memory cells simultaneously," "performing a second soft-programming of a second plurality of memory cells simultaneously," and "performing a third soft-programming of a third plurality of memory cells simultaneously." Roohparvar does not provide these features. Instead, Roohparvar soft-programs each memory cell one at a time. Accordingly, Roohparvar cannot and does not provide the simultaneity called for in claim 18. Claim 18 is thus allowable over Roohparvar.

Various other amendments are made to the claims as shown to provide improved antecedent basis and/or to otherwise place such claims in better form. Also, claims 20-21 are further amended to clarify that these claims do not fall within the scope of 35 U.S.C. § 112, sixth paragraph.

VI.   Conclusion

Overall, none of the references singly or in any motivated combination disclose, teach, or suggest what is recited in the independent claims. Thus, given the above amendments and accompanying remarks, the independent claims are now in condition for allowance. The dependent claims that depend directly or indirectly on these independent claims are likewise allowable based on at least the same reasons and based on the recitations contained in each dependent claim.

If the undersigned attorney has overlooked a teaching in any of the cited references that is relevant to the allowability of the claims, the Examiner is requested to specifically point out where such teaching may be found. Further, if there are any informalities or questions that can be addressed via telephone, the Examiner is encouraged to contact the undersigned attorney at (206) 622-4900.

The Director is authorized to charge any additional fees due by way of this Amendment, or credit any overpayment, to our Deposit Account No. 19-1090.

All of the claims remaining in the application are now clearly allowable. Favorable consideration and a Notice of Allowance are earnestly solicited.

Respectfully submitted,

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